

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application:

**Listing of Claims:**

1           1. (Currently Amended) A carbon nanotube device comprising:  
2                   a substrate including an aperture extending from a front surface  
3           to a back surface of the substrate, with the aperture open only at the front  
4           surface and the back surface;

5                   at least one pair of electrically conducting contact pads disposed  
6           on a selected one of the front and back substrate surfaces with the conducting  
7           contact pads in a given pair of pads being separated from each other by the  
8           aperture;

9                   a carbon nanotube catalyst region disposed on top of each of the  
10          contact pads in alignment with an edge of the aperture and exposed at the  
11          selected substrate surface; and

12                  at least one carbon nanotube extending across the aperture and  
13          accessible through the aperture from both the front surface and the back  
14          surface of the substrate, each end of the carbon nanotube contacting an  
15          exposed catalyst region on a contact pad at the selected substrate surface.

1           2. (Original)       The device of claim 1 wherein the carbon nanotube  
2           comprises a single-walled carbon nanotube.

1           3. (Original)       The device of claim 1 wherein the carbon nanotube  
2           comprises a multi-walled carbon nanotube.

1           4. (Original)       The device of claim 1 wherein the carbon nanotube  
2 comprises a semiconducting carbon nanotube.

1           5. (Original)       The device of claim 1 wherein the carbon nanotube  
2 comprises a metallic carbon nanotube.

1           6. (Original)       The device of claim 1 wherein the at least one carbon  
2 nanotube comprises a plurality of carbon nanotubes.

7. (Canceled).

1           8. (Previously Presented)   The device of claim 1 wherein the substrate  
2 comprises a semiconducting substrate.

1           9. (Previously Presented)   The device of claim 1 wherein the substrate  
2 comprises a membrane having an aperture there-through and on a top surface  
3 of which are disposed the contact pads and the catalyst regions.

1           10. (Original)       The device of claim 9 wherein the membrane  
2 comprises a silicon nitride membrane.

1           11. (Original)       The device of claim 9 wherein the membrane  
2 comprises a silicon dioxide membrane.

1           12. (Previously Presented)   The device of claim 1 wherein the  
2 substrate is aligned between a source of electrons and an electron detector for  
3 nanometer-scale transmission electron microscopy of the carbon nanotube.

13. (Canceled).

14. (Canceled).

1           15. (Previously Presented)       The device of claim 1 wherein the at  
2       least one pair of electrically conducting contact pads comprises a plurality of  
3       pairs of contact pads disposed at locations around the aperture.

Claims 16-30 (Canceled)

1           31. (Previously Presented)   The device of claim 1 wherein the catalyst  
2       regions are less than about 2 nm in thickness.

1           32. (Previously Presented)   The device of claim 1 wherein the catalyst  
2       regions each cover a portion of a contact pad.

1           33. (Previously Presented)   The device of claim 1 wherein the catalyst  
2       regions each cover substantially an entire contact pad.

1           34. (Previously Presented)       The device of claim 1 wherein an edge  
2       of each contact pad is at a periphery of the aperture.

1           35. (Previously Presented)       The device of claim 1 wherein the  
2       contact pads make electrical connection to circuitry provided on the selected  
3       substrate surface with the contact pads.

1           36. (Previously Presented)       The device of claim 1 wherein the  
2       contact pads make electrical connection to at least one device provided on the  
3       selected substrate surface with the contact pads.

1           37. (Previously Presented) The device of claim 1 wherein the substrate  
2 comprises a silicon substrate.

1           38. (Previously Presented) The device of claim 1 further comprising a  
2 free-standing membrane having an aperture there-through and supported at  
3 membrane edges by the substrate, the membrane providing the selected  
4 surface on which are disposed the contact pads and the catalyst regions.

1           39. (Previously Presented) The device of claim 1 wherein the contact  
2 pads each comprise a metal including at least one material selected from the  
3 group consisting of Pt and Cr.

1           40. (Previously Presented) The device of claim 1 wherein the catalyst  
2 regions each comprise a material selected from the group consisting of Fe, Co,  
3 and Ni.

1           41. (Previously Presented) The device of claim 1 wherein the catalyst  
2 regions are each characterized by a layer coverage of no greater than about  $17$   
3  $\times 10^{15}$  atoms/cm<sup>2</sup>.